

IL SANTO

RIVISTA ANTONIANA DI STORIA DOTTRINA ARTE

ANNO XXVIII, serie II, fasc. 1, gennaio-aprile 1988

ESTRATTO

PIERRE-FRANÇOIS PUECH, BERNARD PUECH AND STELLA PUECH

TRIGOCEPHALY IN THE TREASURY CHAPEL

CENTRO STUDI ANTONIANI
BASILICA DEL SANTO - PADOVA

PIERRE-FRANÇOIS PUECH, BERNARD PUECH AND STELLA PUECH

TRIGONOCEPHALY IN THE TREASURY CHAPEL

The basilica of saint Anthony in the city of Padua (Italy) is undoubtedly a famous architectural complex. The great artistic masterpieces are Romanesque, Gothic, Venetian and Byzantine. One decoration from the 18th century made by Filippo Parodi in the Treasury Chapel have an anthropological interest.

The skull at the feet of saint Francis, in the left side of the chapel, have a peculiar shape. The abnormality of the skull results in a medial anterior angulation of the forehead. The incidence of this condition is rather uncommon, the purpose of this paper is to present the appearance of the skull sculpture and, to distinguish this condition from other closes deformities.

THE PADUAN SKULL

The face attracts attention with its wedge-shaped frontal region (Figures 1 and 2). The center of the frontal is characterized by a vertical keel-like deformity giving to the profil a pointed configuration in the upper part of the forehead. The two frontal tuberosities are developed lateral to the central angulation.

The maxilla has a noticeable pronounced alveolare prognathism evidenced by the direction of the naso-alveolar clivus. The palate have a great external breadth, which is associated with a rather large base of the facial portion of the skull and with too wide zygomatic arches.

DISCUSSION

Within the architecture of the head, no component has autonomy. The growth of brain follows to some extent the law of least resistance so the sutures and the muscles insertions may produces characteristic modifications of the dimensions of the head during the cranial growth. Since

the dysmorphism under consideration is situated medial to the frontal bone, we shall discuss anomalies related to the interfrontal suture named the metopic suture.

The dysmorphism called trigonocephaly consist in a triangular pointed frontal bone associated with an anterior shortened frontal bone (Reimenschneider, 1957). The medial angulation of the forehead may be sharp with a vertical bony ridge (Figures 3 and 4), or just rounded when the form is incomplete. A simple trigonocephaly is to be distinguished from a complex form that present a defectively developed forebrain (Currarino and Silverman, 1960). Sutures have a timing of union, closure before the usual age has been correlated with trigonocephaly but this is however questioned (Dominguez et al., 1981).

Premature synostosis of the metopic suture (PSMS) associated with trigonocephaly produces with the medial angulation a close set-up of the orbits and an indented outer supra-orbital area (Figure 4), but symptoms of simple PSMS are more discreet. Simple PSMS is detected by a supraglabellar midline protuberance (Figure 5) also marked on the inner surface of the frontal bone, associated with small vascular foramina along the midline. Upper limbs of the coronal suture are anteriorly curved at the bregma and external breadth at the coronal suture increased as a consequence of reduction of the antero-posterior dimension of the frontal. Orbital dimensions may also be reduced (Puech et al., 1988). True synostosis have to be distinguished from simple narrowing of the forehead with close-set frontal eminences giving a pointed frontal (Figure 6) or with familial and racial mid-line ridging.

In Eskimos and some Africans there is evidence that there are changes in the shape of the frontal related to the resistance of the temporal muscles to the skull growth (Hrdlicka, 1910). A compensatory increase in the height and length of the skull is initiated by the great development and activity of the muscles evidenced by a marked eversion of the rami angle of the jaw. A fronto-parietal sagittal elevation is remarkable. Examination of the inner surface of the skull shows that the elevation is due in the most to a thickening of the bone, thus the appearance is that of a bony ridge. In Eskimo the orbits are spacious.

CONCLUSION

Comparison of slight to pronounced medio-frontal elevations related to the metopic suture have shown the diversity of the causes of the deformity. In all cases the elevation is in connection with a sutural accumulation of bone.

Late recognition of premature synostosis of the metopic suture is essentially made by anthropological methods because the metopic suture



Fig. 1: The abnormality of the skull at the feet of saint Francis results in a medial anterior angulation of the forehead.



Fig. 2: The center of the frontal is characterized by a vertical keel-like deformity called trigonocephaly.



Fig. 3: *Trigonocephaly consists in a triangular pointed frontal.*



Fig. 4: *In trigonocephaly the medial angulation of the forehead is sharp and vertical.*



Fig. 5: *A premature synostosis of the mid-frontal suture determines a more discreet medial angulation (here the frontal of W.A. Mozart).*



Fig. 6: *A narrowing of the forehead gives a pointed frontal in children (portrait of Lina Calamatta by her father, Georges Sand Museum).*

is the first cranial suture to obliterate and therefore its synostosis is easily compensated by the other frontal joints. During the growth of the head a great many changes in size and shape occur.

In trigonocephaly it is the uncommon configuration of the frontal in infants that is diagnosis, so spontaneous improvement in the angulation of the frontal bone in adults will usually only leave the related features of simple PSMS. The association of a very rare defectively developed forehead in an adult head thus identifies trigonocephaly in the sculpture of Filippo Parodi. Fully lively and temporal the head sculpture bears very peculiar human features.

The artist would have then intentionally chosen to sculpt the abnormal skull, perhaps the skull of a person he had known. The pictures and sculptures of past centuries abounded in symbols. The choice of this peculiar skull had a meaning which we have to rediscover.

Acknowledgments

We wish to acknowledge with thanks the anthropological assistance of N. Petit-Maire, the translation by R. Puech and the photographic assistance of Brother Lucio and R. Dominguez.

LITERATURE CITED

- CURRARINO G. AND SILVERMAN F.N., 1960, *Orbital hypotelorism, arhinencephaly, and trigonocephaly*. Radiology, 74 206-217.
- DOMINGUEZ R., OH K.S., BENDER T. AND GIRDANY B.R., 1981, *Uncomplicated trigonocephaly*. Pediatric radiology, 140 681-688.
- HRDLICKA A., 1910, *Contribution to the anthropology of Central and Smith sound Eskimo*. Anthropological papers of the American Museum of Natural History, 5 (2) 177.
- PUECH B., PUECH P.-F., TICHY G., Dhellemmes P. and Cianfarani F. *Craniofacial dysmorphism in the Mozart's skull m. s.*
- RIEMENSCHMEIDER P.A., 1957, *Trigonocephaly*. Radiology, 68 863-865.

Sommario: Filippo Parodi ha scolpito un cranio anormale ai piedi di s. Francesco nella cappella del Tesoro della basilica antoniana di Padova. Il cranio presenta una fronte piegata verticalmente nel suo centro, un prognatismo sottonasale e una consistente larghezza palatale e bizigomatica. Tale disformia è la conseguenza di una sutura prematura della sutura metopica (SPSM) che dà generalmente nell'adulto delle deformazioni più attenuate. Bisogna distinguere la SPSM dagli aspetti particolari della fronte propri di certe popolazioni o provocate dal debole balzo delle protuberanze frontali. Il significato di questa scelta poteva probabilmente essere compreso per dei particolari significativi dai contemporanei dell'autore.